

ABSTRACT

A transducer for converting flow energy to acoustic energy, requiring little or no electrical excitation of the device. Process liquid flows through an orifice into the device, past oscillatory members made of resilient material in a high-Q configuration prone to vibration. The turbulent flow of the process liquid causes the oscillatory members to vibrate and, eventually, to resonate. Acoustic waves propagate from one oscillatory member to another oscillatory member and back, conserving acoustical energy and exerting extreme compression and shear forces on the process liquid. Rarefaction may result in cavitation, resulting in extreme local and instantaneous pressures and temperatures. The device is suitable for applying physical work to process fluid for the purpose of destroying bacteria, homogenization, or promoting sonochemical reactions between fluids.